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Impact of Industrial Pollution on the Immediate Neighbourhood (A Case Study of Dangote Cement Ibese in Yewa North Local Govt. Ogun State.)

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***Abstract*:** *The main aim of this paper is to examine the impact of Dangote cement industry located at Ibese Ogun state in the immediate neighborhood. The study adopts structured questionnaires and personal interview that focus on the socio-economic activities, pollution, and health of the people. Pollution has led to unproductive agricultural land, contamination of underground water resulted to scarcity within the settlement, frequent sickness from diarrhea/ typhoid, eye problem and regular crashes of trucks which claim life and destruction of the existing roads and noise pollution from the horn of the trucks within the settlement cause distraction fear in day and night. The study recommends there should be an alternative road from the factory to Lagos- Abeokuta express way and Dangote cement should carry out its corporate social responsibility e.g. supply of clean potable water, grading of township road to reduce erosion, construction of school, hospital and provide necessary measures for pollution control within the factory.*

KEYWORDS: *Dangote Cement, Health Industry, Neighborhood, Pollution*

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I. INTRODUCTION

During the Industrial Revolution of the eighteenth and nineteenth centuries, pollution became a major problem with the introduction of the steam engine and a series of technological advances that led to the production of goods and services, shifting it from homes and small factories to large industrial factories. The invention of more productive processes to manufacture cotton textiles contributed greatly to the number of mills located in England and later in the Northeastern United States.

Industrial pollution is particle especially waste gases like carbon monoxide, sulfur oxides, and nitrogen oxides which are the waste products of industry and end up in the air. Industrial emissions are the second largest pollutants of the atmosphere after automotive exhausts **(**Gull, Ali, Hussain, Nawaz & Mushta 2013). During the Industrial Revolution, companies were virtually concerned with production and profits. There was little time for or concern with the effects of pollution. Companies were by and large concerned with the means of production rather than the effect of production on the environment.

In respect to cement production in Africa, Nigeria offers the highest growth opportunity in the sector, the dynamics of Nigeria cement production is however, changing tremendously since the entrant of a key player like Dangote cement. Oluwakiyesi (2011) opined that, Nigerian cement industry has witnessed a radical shift with the entry of Dangote group into cement production. The cement industry in Nigeria has experienced immense growth over the past few years. With a population of over 140 million people and a growth rate of approximately 3% per annum, the demand for and consumption of cement is expected to increase, however, government remains the largest consumer of cement in the country with an estimated 50% of total consumption (NSE, 2015).

Industrialization is an essential feature of economic growth in developing countries including Nigeria where industrial practices has adverse effects on environmental and consequences were air and water pollutants and the disposal of hazardous wastes in open areas (Shiru, 2011). Despite the major efforts that have been made over recent time to clean up the environment, pollution remains a major problem and poses continuing risks to health and the environment (David 2015). This is often the case in developing countries, where less attention is paid to environmental protection, environmental standards are often inappropriate or not effectively implemented and pollution control techniques are not yet fully developed. With rapid economic development, many developing countries, like China and other Asian countries, face some additional environmental problems.

As the impact of human activities and issues of environmental health become enormous globally in scale and extent, the need to recognize and to address the health risks associated with environmental pollution becomes even more urgent (David, 2015). All types of pollution that can trace its source to industrial practices is well known as industrial pollution. Most of the pollution on the planet traced to industries activities. Issue related to industrial pollution has taken on the grave importance for agencies trying to fight against environmental degradation (CEF, 2015). Rapid industrialization, urbanization and newly introduce technology in waste products that affect the environment.

Emissions to the atmosphere tend to be more dangerous and more generally reported, than another medium because of their greater importance to environmental pollution and health problems. The effects of air pollution on the environment are the same as any other pollution is harmful to the environment as well as human beings. It is very important to know that industrial pollution has no boundary traveled long distance to affect the environment. The aim of this study is to examine the impact of Dangote cement industry on the Ibese community.

Statement of Problem

Unfavourable government policies over the years towards the cement companies and the manufacturing sector at large has been disappointing. Policies such as the privatisation of previously government controlled cement companies which led to their collapse due to underfunding, government's ban and subsequent lifting on the importation of cement and the imposition of multiple taxes on producers have all had negative implications on industry growth prospects (NSE, 2015). The individual in that sector fails to recognize the consequences of industrial pollution on the health of inhabitants and their socio-economic activities. The problems are undoubtedly greatest in the developing world, where traditional sources of pollution such as industrial emissions, poor sanitation, inadequate waste management, contaminated water supplies and exposures to indoor air pollution from biomass fuels affect large numbers of people (David, 2015).

Research Questions

The study intends to answer the following questions:

i. What are the socio-economic problems faced by the residents due to location of cement factory in Ibese community?

ii. What are the effects of industrial pollution on health of inhabitants in Ibese community?

iii. What are the effects of industrial pollution on the Agricultural produce in Ibese community?

II. LITERATURE REVIEW

The public is becoming increasingly aware of the interactions and conflicts between industry and the environment. The industrialization of the world has had a profound effect on its people and environment. An industry has not always performed admirably with respect to its responsibility for the pollution it passes into the environment. In assessing the impact of industrial pollution on the social and economic activities of the host communities has been a challenge to living standard. This industrial pollution also affects the health status of the people residing in these areas.

Tijani, Ajobo and Akinola. (2005) studied the effects of Cement production externalities and profitability of cropeEnterprises in Two Local Government Areas of Ogun State where cement factory is located, Sagamu and Ewekoro, discovered that, the majority of farmers in the polluted areas are within 51-60 age bracket while the modal age bracket of those in the control area is 41-50 years. This implies that the most productive age group was not involved in farm production in the affected area due probably to alternative wage employment provided by WAPCO and other companies situated in Shagamu and Ewekoro and Farm production risk seems higher in the affected than in the control area as soils is affected.

Assessment of health and environmental challenges of cement factory on Ewekoro community residents, Ogun State, Nigeria**.** A study carried out by Aribigbola, Fatusin and Fagbohunka (2012) revealed that limestone mining in Ewekoro has resulted in the conversion of farmlands into quarry sites, reduces farm product and increase hunger in the land as a result of deforestation. Also the houses are mainly used as shops and stores for the products of the factory and built without respect to planning regulations and standard.

According to Mehraj, Bhat, Balkhi and Gul (2013) opined that, there was a high level of gaseous and particulate pollutant of cement in their environment when compared with the factory site and the standards prescribed by the Central Pollution Control Board of India, cement dust is not only the major cause of environmental pollution in the study area but also a threat to health of local inhabitants.

A study conducted in Jordan on the assessment of ambient air quality by cement industry was carried out by Abu-Allaban and Abu-Qudais (2011) indicated that, after the implementation of the proposed project, concentrations of air pollutant are found to be below the permissible Jordanian standards for ambient air quality. Therefore, it may not have significant effects on the environment but regular monitoring and continuous auto regulation needs to put into reduce emission that can poses threat to the environment in future.

Gull, *et.al*., (2013) identified through the use of a questionnaire that, there is a relationship between the residence in the industrial area and respiratory disease. However, the relationship is weak between the people living closer to the factory and health problems due to industrial smoke. Results show that 83.3 percent respondents acknowledged that industrial air pollution is responsible for problems while people lived far away from in industries have fewer chances of being affected, in a research conducted on industrial air pollution and its effect on human's respiratory system in Bhoun Sugar mill district Jhang, Pakistan.

Assessment of pollution potentialities of some Portland cement was carried out by Ibrahim, Birnin-Yauri, Muhammad, and Umar (2012) examined the percentage compositions of various major and minor constituents of the cement samples within the specifications of American standard for testing materials (ASTMC 15). This means that the cement produced in Nigeria is of high quality that can improve and increase durability of construction work within the country.

Mojekwu, *et.al* (2013) studied the contribution of imported and locally manufactured cement to the growth of gross domestic product (G. D. P) of Nigeria between 1986 – 2011, an avenue to increase socioeconomic situation of the country but hindered by policy inconsistency, political instability, high energy cost, inadequate and high cost of electricity and detrimental attitude to deregulation.

Kusena, Shoko and Marambanyika, (2012). Revealed in a study carried out on socioeconomic impacts of cement production at Sino-Zimbabwe on Hozheri Community, Gweru, Zimbabwe concluded that, the Company's operations affects socio-cultural norms of the society as their operations destroyed their sacred places, increased immorality and introduced new diseases. The research recommended that the company must increase employment opportunities for local people, especially for semi-skilled and unskilled work, therefore, the local investments must commensurate to their profits making to change the perceptions of some community members.

The current high price of cement coupled with government's ability to tackle the infrastructural challenges within Nigeria is reduced and without a reduction in the price of cement, private sector contribution to housing production is in shamble, housing deficit in the country estimated at 17 million will remain insignificant. The industry employs over 5,000 people as largest employers of labour in Nigeria (NSE, 2015). The cement industry is presently consolidated nationwide, estimates varies, but approximately 40% of world production and capacity is controlled by just a few international companies (Van-Oss and Padovani, 2003). Therefore the rate of production will be high to meet larger population demand and increase pollution rate within production environment. The gap identified in this review revealed that, most of the researchers were based on the health and pollution of the environment but socials and psychological effects of the inhabitants are not considered, high cost in housing rent and frequent crashes and road damage by the trailer drivers.

III. STUDY AREA

Ibese is situated in Yewa North, Ogun, Nigeria, its geographical coordinates are 6° 58' 0" North, 3° 2' 0" East and its original name (with diacritics) is Ibese. The inhabitants are mainly farmers and traders. The mineral resources found in the study area include phosphate and limestone that necessitate the production of cement. A cement factory (Dangote Cement) was situated at Ibese to complement the resources and the topography has a wide area of undulating lowland with marshy areas that prevent further development.

IV. METHODOLOGY

The research based on both qualitative and quantitative sampling techniques. A total population of 3,331 in 1996 population projection reside in the study area, but presently accommodated with 410 housing units, the housing unit was used as a unit of sampling. A sample size of 41 households was selected based on the ten percent of the total housing unit. This study adopts two ways of data collection which are primary and secondary sources, the secondary source includes published materials from journals, government publication etc. While the primary sources were carried out through personal observation and administration of the questionnaire. The questionnaire was section into demographic/ personal data, socioeconomic data, health and environmental pollution and randomly administered to the respondents in Ibese community and distributed based on the number of housing units selected in the settlement.

V. DISCUSSION OF FINDINGS

Socio-Economic Characteristics of the Respondents

The study revealed that 22% of the respondents is between Age 18-25 (26-45) while 41 were 46 and above in Age. It shows that high percentage of youth moves out of the community for a better opportunity. The educational qualification of respondents revealed that 34% obtain primary school certificate, 29% secondary education, 15% tertiary while 22% have an informal education. The highest number of respondents obtain primary school certificate followed by secondary school certificate which means the categories leaves the community for further education or better jobs.

The occupational activities of respondents show that 12% were farmers, 22% civil servant, 56% traders, and 2% drivers. The sex of respondents indicates that 44% male while 56% female. From the analysis, more women will engage in trading and serve as an intermediary between the farmer and final consumer on farm products. The emergence of Dangote cement factory at Ibese increases number of traders. One can assert without absurdity that industrialization is central to the economic advancement of any nation, the consequence is more than prospect for the citizenry (Okpako, & Berewari, 2014). The number of farmers was reduced as a result of the Dangote cement factory located in the settlement, is creating problems in agriculture and destroying local vegetation. It may cause chronic health issues to the people that come in contact with such soil on a daily basis. The income level of the respondents in the study area shows that49% obtain less than N10,000 per month, 10,000 – 20,000, 22% above 41, indicate 12%. The income level and educational background of the respondents were related. The analysis shows that majority of respondent are traders. 41% employed, 54% unemployed and 2% retiree. The academic qualification of the respondents makes it difficult to secure sustainable means of living. The indigene settles with either a truck loader or cleaners within the factory. Most of the inhabitants believe that Dangote cement supposed to place them in a higher position as an indigene. The study revealed that between 6 – 10 years, 15% between 11 – 15 years while 16 years and above is 49%. This analysis shows that majority of Dangote cement factory workers reside outside the community with a total of 20% percent. The low level of infrastructure facilities within the community contributed to the higher population in the neighboring communities.

Above 66% owned the building occupied while 5% occupied a room apartment, the occupancy indicates that Brazilian types of building dominate the settlement.

Impact of Pollution on the Community

The analysis shows that 29% experience air pollution from Dangote cement industry, 17% suffer from industrial waste, 24% indicate water pollution, the cement contaminates the underground water in some part of the settlement and moves far distance to obtain water for both domestic use and drinking. 61% experience the pollution regularly, 17% very regular and 12% of total respondents experience the pollution from Dangote cement factory occasionally. Berhe, Alemayehu, Fortuin, (2014) observed in Messebo Cement Factory in Ethiopia, that continuous condition of the surrounding during the rainy season is caused by frequently excavation and the local inhabitants agree to the fact that storm water is the effect of water logging, water contamination, and health related problems like malaria and diarrhea. The pressures on companies to reduce pollution have varied over time with societal expectations and attitude, but profit maximization is always the problem and attitude of the government toward protection of citizenry was not supported.

Table:1 Pollution and Experience Cross tabulation

Source of pollution	Experience				Total
	1.00	2.00	3.00	4.00	
Air Pollution	13	0	0	0	13
Industrial waste	7	0	0	0	7
Water Pollution	5	5	0	0	10
Refuse/toxic dumps	0	2	1	0	3
Both A, B, and C	0	0	4	4	8
Total	25	7	5	4	41

Table 1 shows the extent of pollutant in the study area, from the analysis, Air pollution has the highest with 13%, industrial waste that affects the farm land7% and water pollution 5%.the inhabitant trek long distance to get water for daily activities which not economical and part of the community cannot dig well or borehole as source of water. The effects of industrial air pollution on physical environment are same as any other pollution, harmful to the environment as well as human beings **(**Gull, *et.al.,*2013). The analysis granted indicate that 17% have a respiratory problem, 24% eye problem, Diarrhea and typhoid 37% in that community as a result of Dangote cement factory in which is not rampant before the commencement of production in the area. From similarly study by Berhe, Alemayehu & Fortuin (2014) shows that dust particulate within a surrounding environment have it consequence on darkening the area, covering of farmland product, plant, and houses in the area covered by the dust with health problems like respiratory and skin diseases associated with the production of cement in the area. From in depth interview conducted from community maternity home, there is an increase in the number of typhoid and diarrhea as a result of cement production in their area and no contribution from Dangote cement authority to improve the health being of the inhabitants. Interview granted to the inhabitants revealed that Dangote cement only provide the major road in the community as a result of regular accident occurs within the area, and the road does not have side walk/pedestrian walk way which causes accident between the truck and Okada riders. The community also experiences noise pollution from the horn of trucks plying the community road day and night at a particular time resulting in a sleepless night, pollution from exhausts of the truck affect visibility with the settlement and we face the structure. This is contrary to a study in Sino- Zimbabwe by Kusena, Shoko & Marambanyika (2012) where about, 65% of households were pleased with the production by Cement Company because the factory provides toilet constructions, road construction, free medical services and education development that will increase the level of awareness concerning pollution and mitigating measure to be put in place.

Table 2: shows the one sample test conducted to determine the level of pollution, table calculation is 11.398 while table value is 2.187 at 95% confidence interval of difference. Since calculation value is greater than table value at 0.05 degree of freedom at a lower value, hence there is a high experience of pollution in the study area and the major pollution is air with high percentage. A wide range of pollutants always associates with the transformation of raw materials into industrial finished products at the various stages of the process. Okpako & Berewari, (2014) in a study put forward that, sufficient medical arrangement should be made available at no cost in well-equipped health centers for the inhabitants to guide against minor ailments developing to serious diseases either at endemic or epidemic rates. The link between pollution and health is both a complex and contingent process. For pollutants to have an effect on health, susceptible individuals must receive doses of the pollutant, or its decomposition products, sufficient to trigger detectable symptoms

Table2: Level of pollution

Test Value = 0					
T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
11.398	40	.000	2.65854	2.1871	3.1299

The study revealed in table 4 that, there is high experience of industrial pollution in the settlement, the sample test conducted shows that, the calculation value is 10.607 and table value 1.382 at 95% confidence interval, since calculation value is greater than table value which revealed that there is high experience of Dangote industrial pollution at regular interval within the settlement. The effects of industrial pollution are far reaching and liable to affect the ecosystem for many years to come because Dangote cement industry just commences production which indicates that the experience on water pollution is far. Has already rendered many ground water resources useless for human's consumption

Table3: level of experience

Test Value = 0					
t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
10.607	40	.000	1.70732	1.3820	2.0326

VI. CONCLUSION AND RECOMMENDATIONS

The paper studied the impact of Dangote cement industry on their immediate neighborhood. It established that, the pollution from the factory contribute to a regular and high number of health challenges faced by the host community. Also, the production affects existing land for agricultural practices, water body and emission of carbon monoxide destroy plants which resulted to stunt a growth of farm produce. Sometimes, polluting companies have not succumbed to social, political, and governmental pressures. Several companies have denied responsibility for pollution even when faced with strong evidence to the contrary. Other companies, after admitting responsibility, promise strong action but deliver nothing. Dangote cement should carry out its corporate social responsibility to improve living condition of the inhabitants because there is reduction in level of agricultural produce due to the toxic release from the factory and reduction of land as a result of excavation because most of the inhabitants depend on farm produce and put an end to effluents from the factory. The problems are undoubtedly greatest in the developing world, where traditional sources of pollution such as industrial emissions, poor sanitation, inadequate waste management, contaminated water supplies and exposures to indoor air pollution from biomass fuels affect large numbers of people. But filling up gullies created by excavation of laterite, diverting industrial waste away from streams, fully implementing directives or recommendations of environmental impact assessments will have impact on the physical, social and economic well-being of the residents. Lack of effective policies and poor enforcement drive allowed many industries to bypass laws made by the government to control pollution resulted in mass scale pollution that affected lives of many people in the industrial areas.

RECOMMENDATION

There should be an alternative road to Lagos Abeokuta express way to reduce the concentration of truck within the settlement and papa – Ilaro road to reduce accidents.

- The major road within Ibese should provide with pedestrian walk- ways to increase the width and create lanes for alternative users.
- Regular health check by Dangote cements authority on the Ibese community to control health hazard.
- The industry should employ the indigene of the community to reduce social unrest.
- The major road within the settlement should provide with drainage to reduce the excess of flooding during the rainy season.
- Dangote cement should carry out its corporate social responsibility e.g. supply of clean potable water, grading of township road to reduce erosion, construction of school and building of a hospital. (Werner, 2009) corporate social responsibility is an increasingly important tool to maximize the positive development impact of corporations and commercial activity in the developing world.

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